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EXAMINER	
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ART UNIT	**PAPER NUMBER**
2128	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/772,592	SLATER, ROBERT D.	
	Examiner	Art Unit	
	Shambhavi Patel	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *05 February 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-56* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-56* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/5/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-56 are pending.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 5 February 2004 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the Examiner has considered the IDS as to the merits.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 1-44 and 51-56 are rejected under 35 U.S.C. 112, second paragraph**, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding independent claims 1, 36 and 51, it is unclear what statutory category these claims belong to (i.e. system, apparatus, etc.). All other claims are rejected by virtue of their dependency.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. **Claims 1-56 are rejected under 35 U.S.C. 101** because the claimed invention is directed to non-statutory subject matter.

Regarding claims 1-44 and 51-56:

It is unclear what statutory category these claims belong to (i.e. system, apparatus, etc.). All other claims are rejected by virtue of their dependency.

Regarding claims 1-56:

The Examiner asserts that the current state of the claim language is such that a reasonable interpretation of the claims would not result in any useful, concrete or tangible product. Merely advancing to the next change of said local or global states can be reasonably interpreted as just a computation within a processor. It does not produce a tangible real-world result, because the result is not saved or conveyed to the user. All other claims are rejected by virtue of their dependency. See MPEP 2106, which states:

> The tangible requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. However, the tangible requirement does require that the claim must recite more than a 35 U.S.C. 101 judicial exception, in that the process claim must set forth a practical application of that judicial exception to produce a real-world result. Benson, 409 U.S. at 71-72, 175 USPQ at 676-77 (invention ineligible because had "no substantial practical application."). "[A]n application of a law of nature or mathematical formula to a ... process may well be deserving of patent protection." Diehr, 450 U.S. at 187, 209 USPQ at 8 (emphasis added); see also Corning, 56 U.S. (15 How.) at 268, 14 L.Ed. 683 ("It is for the discovery or invention of some practical method or means of producing a beneficial result or effect, that a patent is granted . . ."). In other words, the opposite meaning of "tangible" is "abstract."

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claim 1-5, 7-9, 35-38 and 45-49 are rejected under 35 U.S.C. 102(b)** as being clearly anticipated by **Upadhya ('A Simulation Model for Availability Under Battlefield Conditions', 2000).**

Regarding claim 1:

Upadhya discloses a discrete event simulation (DES) for the operations and support (O&S) problem of a weapons system, comprising:

a. a plurality of dynamic objects having attributes that represent characteristics of weapons, said attributes having local values that define a local state of each dynamic object (**'4. Implementation' 1st paragraph**). The term 'dynamic objects' is interpreted in light of the specification (**[0012]**) to be weapons. Upadhya discloses performing simulation on weapon platforms.

b. a plurality of static objects having data that is global with respect to the dynamic objects and functional operators, at least some of which are probabilistic (**figure 1**). The term 'static objects' in interpreted in light of the specification (**[0046]**) which states:

> More specifically, the static objects operate on the dynamic objects and/or their attributes in accordance with their functional operators and global data. Common primitive operations include DO delays (scheduling DOs for Future Events), reading, writing, and/or performing arithmetic operations on attributes of DOs, splitting one DO into multiple DOs, or merging multiple DOs together, gathering and compiling information and statistics on DOs, seizing or releasing global static resources objects, and queuing DOs and routing DOs.

Upadhya discloses a state transition table for simulation composed of *static objects* that compute the failure rates *(global data)* of weapons *(dynamic objects)* utilizing exponential and log-normal distributions *(probabilistic)*

c. a network of said static objects that are organized in accordance with a service use profile (SUP) to calculate a time-based prediction *(the variables representing the transitions are dependent on time)* of weapons availability over a life cycle of the weapons system, said

network having a global state **(figure 1 and accompanying description: output is availability, which is global data)**

d. a simulation engine that advances to the next change of said local or global states whereat said static objects read and write said attributes in accordance with their functional operators and global data and update the time-based prediction of weapons availability as the dynamic objects traverse the network **('4. Implementation'; '5. Parameter Values')**.

Regarding claim 2:

Upadhya discloses the DES of claim 1, wherein said attributes include TTF, down time **(equation 7: MTTF; figure 1 repair).**

Regarding claim 3:

Upadhya discloses the DES of claim 1, wherein at least some of said common attributes have a plurality of local values determined by environment or time **('5. Parameter Values' battle damage rate, characteristic life).**

Regarding claim 4:

Upadhya discloses the DES of claim 1, wherein the simulation calculates a time-based prediction of operational and stockpile weapons availability **(figure 3 and accompanying description)**

Regarding claim 5:

Upadhya discloses the DES of claim 1, wherein the simulation calculates a time-based prediction of warranted and not warranted maintenance activities **(figure 4: tables 1 and 2).**

Regarding claims 7-9:

Upadhya discloses the DES of claim 1, wherein the static objects comprise a plurality of primitive blocks and a plurality of common blocks that are organized in accordance with the SUP, each common block comprising a plurality of primitive blocks and/or other embedded common blocks configured to process the dynamic objects and global data to route the dynamic objects, modify the dynamic objects or perform a statistical or informational calculation for a defined block function to support the calculation of the time-based predictions **(figure 1)**. The topology for the network is shown in **figure 1**, and the instruction set (i.e. equations) for each block are discussed in **'2. Methodology'**, and the assignment of the parameter values is discussed in **'5. Parameter Values'**. The term 'primitive block' is interpreted in light of the specification **[0046]**:

> Common primitive operations include DO delays (scheduling DOs for Future Events), reading, writing, and/or performing arithmetic operations on attributes of DOs, splitting one DO into multiple DOs, or merging multiple DOs together, gathering and compiling information and statistics on DOs, seizing or releasing global static resources objects, and queuing DOs and routing DOs.

The term 'common block' is interpreted in light of the specification **[0055]** (emphasis added):

> The functionality of common blocks fall into one of three general types: DO routing based upon attributes of DOs and/or global data input to the block; DO modification based upon attributes of DOs and/or global data input to the block; and Statistics/Information calculation based upon DOs and/or global data input to the block.

Upadhya discloses blocks that calculate statistical information on the weapons.

Regarding claim 35:

Updadhya discloses the DES of claim 1, wherein the SUP describes a logical structure of delivery, maintenance, deployment, and testing policy and infrastructure and logistic constraints (**'2. Methodology'; '3. Structure of Simulation'; '4. Implementation'**).

Regarding claim 36:

Upadhya discloses a discrete event simulation (DES) for the operations and support (O&S) problem of a weapons system, comprising:

a. a plurality of dynamic objects having Birth Date (t_0), Time-to-Failure (TTF) variate **(equation 7)**, Duty Cycle **('5. Parameter Values')**, Down Time **(figure 1 repair)**, MTBF **(equation 7)**, common attributes that represent characteristics of a weapon, said attributes having local values that define a local state of each dynamic object **(figure 1)**. The term 'dynamic objects' is interpreted in light of the specification **([0012])** to be weapons. Upadhya discloses performing simulation on weapon platforms.

b. a plurality of static objects including primitive blocks and common blocks having data that is global with respect to the dynamic objects and functional operators, at least some of which are probabilistic **(figure 1)**, each common block comprising a plurality of primitive blocks and/or other embedded common blocks configured to process the dynamic objects and global data to route the dynamic objects, modify the dynamic objects or perform a statistical or informational calculation for a defined block function **('2. Methodology')** selected from BIT, Stockpile Availability, Observe A.sub.0, Operational Availability **(figure 1)**, Warranty Check, Set Failure Variates, Service Life Check and Parts Spares. The term 'static objects' in interpreted in light of the specification **([0046])** which states:

> More specifically, the static objects operate on the dynamic objects and/or their attributes in accordance with their functional operators and global data. Common primitive operations include DO delays (scheduling DOs for Future Events), reading, writing, and/or performing arithmetic operations on attributes of DOs, splitting one DO into multiple DOs, or merging multiple DOs together, gathering and compiling information and statistics on DOs, seizing or releasing global static resources objects, and queuing DOs and routing DOs.

Upadhya discloses a state transition table for simulation composed of *static objects* that compute the failure rates *(global data)* of weapons *(dynamic objects)* utilizing exponential and log-normal distributions *(probabilistic)*

c. a network of said primitive and common blocks that are organized in accordance with a service use profile (SUP) that describes a logical structure of delivery, maintenance, deployment and testing policy and infrastructure and logistics constraints to calculate a time-based prediction of stockpile and operational weapons availability, maintenance activities, and spare parts stock over a life cycle of the weapons system, said network having a global state **(figure 1 and accompanying description: output is availability, which is global data)**

d. a simulation engine that advances to the next change of said local or global states whereat said primitive and common blocks read and write said attributes in accordance with their functional operators and global data and said network updates the time-based predictions as the dynamic objects traverse the network **('4. Implementation'; '5. Parameter Values')**.

Regarding claim 37:

Upadhya discloses the DES of claim 36, wherein the MTBF attribute has a plurality of values for different environments **('2. Methodology' simulation model 2)**.

Regarding claim 38:

Upadhya discloses the DES of claim 36, wherein the MTBF attribute increases as the weapons system matures but decreases as individual weapons age **('2. Methodology' simulation model 1)**.

Regarding claim 45:

Upadhya discloses a method of analyzing an operations and support problem of a weapons system, comprising:

a. creating a model of the O&S problem based on a service use profile (SUP) that describes a logical structure of delivery, maintenance, deployment and testing policy and infrastructure and logistics constraints (**'2. Methodology' right hand column simulation model)**

b. translating the model into a discrete even simulation in which dynamic objects flow through a network of static objects that are organized in accordance with the model, said dynamic objects having common attributes with local values and said static objects having data that is global with respect to the dynamic objects and functional operators at least some of which are probabilistic **(figure 1; '4. Implementation' 1st paragraph).** The term 'dynamic objects' is interpreted in light of the specification **([0012])** to be weapons. Upadhya discloses performing simulation on weapon platforms. The term 'static objects' in interpreted in light of the specification **([0046])** which states:

> More specifically, the static objects operate on the dynamic objects and/or their attributes in accordance with their functional operators and global data. Common primitive operations include DO delays (scheduling DOs for Future Events), reading, writing, and/or performing arithmetic operations on attributes of DOs, splitting one DO into multiple DOs, or merging multiple DOs together, gathering and compiling information and statistics on DOs, seizing or releasing global static resources objects, and queuing DOs and routing DOs.

Upadhya discloses a state transition table for simulation composed of *static objects* that compute the failure rates *(global data)* of weapons *(dynamic objects)* utilizing exponential and log-normal distributions *(probabilistic)*

c. executing the discrete event simulation by advancing to a next state whereat said static objects read and write said common attributes in accordance with their functional operators and global data and said simulation updates a time-based prediction of weapons availability over a life cycle of the weapons system **('4. Implementation'; '5. Parameter Values').**

Regarding claim 46:

Upadhya discloses the method of claim 45, wherein said attributes include TTF, down time **(equation 7: MTTF; figure 1 repair).**

Regarding claim 47:

Upadhya discloses the method of claim 45, wherein the MTBF attribute has a plurality of values for different environments **('2. Methodology' simulation model 2).**

Regarding claim 48:

Upadhya discloses the method of claim 45, wherein the MTBF attribute increases as the weapons system matures but decreases as individual weapons age **('2. Methodology' simulation model 1).**

Regarding claim 49:

Upadhya discloses the method of claim 45, wherein the static objects comprise a plurality of primitive blocks and a plurality of common blocks that are organized in accordance with the SUP, each common block comprising a plurality of primitive blocks and/or other embedded common blocks configured to process the dynamic objects and global data to route the dynamic objects, modify the dynamic objects or perform a statistical or informational calculation for a defined block function to support the calculation of the time-based predictions **(figure 1)**. The topology for the network is shown in **figure 1**, and the instruction set (i.e. equations) for each block are discussed in **'2. Methodology'**, and the assignment of the parameter values is discussed in **'5. Parameter Values'**. The term 'primitive block' is interpreted in light of the specification **[0046]:**

> Common primitive operations include DO delays (scheduling DOs for Future Events), reading, writing, and/or performing arithmetic operations on attributes of DOs, splitting one DO into multiple DOs, or

> merging multiple DOs together, gathering and compiling information and statistics on DOs, seizing or releasing global static resources objects, and queuing DOs and routing DOs.

The term 'common block' is interpreted in light of the specification **[0055]** (emphasis added):

> The functionality of common blocks fall into one of three general types: DO routing based upon attributes of DOs and/or global data input to the block; DO modification based upon attributes of DOs and/or global data input to the block; and Statistics/Information calculation based upon DOs and/or global data input to the block.

Upadhya discloses blocks that calculate statistical information on the weapons. The common blocks include stockpile availability **(figure 1 simulation output)** and service life **(figure 1 repair).**

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. **Claim(s) 6 and 44 are rejected under 35 U.S.C. 103(a)** as being unpatentable over **Upadhya ('A Simulation Model for Availability Under Battlefield Conditions' 2000) in view of Srinivasan ('Availability of Weapon Systems with Logistic Delays: A Simulation Approach' 2003.**

Regarding claim 6:

Upadhya discloses incorporating spares into the DES simulation **('7. Discussion and Conclusions' 1st and 2nd paragraphs).** However, he does not explicitly disclose calculating a time-based prediction of spare stock parts. **Srinivasan teaches** calculating the availability by incorporating in logistic delays, which are partially caused by spare stock parts **(Srinivasan: '1. Introduction' 4th paragraph; '2. Methodology' 4th paragraph).** At the time of the invention, one of ordinary skill in the art would obviously have combined the teachings of Upadhya and Srinivasan because they are of analogous art *(simulating weapons availability)*, and it is important to incorporate the effect of logistic delays (i.e. spare stock parts) because it has a large effect on the availability of weapons **(Srinivasan: '5. Discussions and Conclusions' 1st paragraph).**

Regarding claim 44:

Upadhya does not disclose the incoroporation of a logistic delay. **Srinivasan teaches** randomly calculating an isolation delay, a removal delay and a replenishment delay **(Srinivasan: '2. Methodology' simulation model assumption 4; '4. Implementation' page 10).** A skilled artisan would have knowingly used randomized delays because it allows for an accurate calculation of weapons availability **(Srinivasan: '4. Implementation' page 10).**

Allowable Subject Matter

6. **Claims 10-34, 39-43 and 50 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.** The following is an **Examiner's reasons for allowance:**

Regarding claims 10 and 50:

The prior art of record does not teach having a plurality of common **blocks that include all of the following:** BIT, Stockpile Availability, Observe A_0, Operational Availability, Warranty Check, Set Failure Variates, Service Life Check, and Parts Spares. The Examiner notes the following interpretations (based on the Applicant's disclosure) of the preceding terms:

i. BIT: **[0153] – [0166]**

ii. Warranty Check: **[0171] – [0178]**

iii. Stockpile Availability: **[0093] – [0105]**

iv. Set Failure Variates: **[0107] – [0119]**

v. Service Life Check: **[0120] – [0130]**

vi. Observe A_0: **[0132] – [0140]**

vii. Operational Availability: **[0142] – [0151]**

viii. Parts Spares: **[0182] – [0195]**

Claims 11-34 are deemed allowable because they depend on allowable claim 10.

Regarding claim 39:

The prior art of record does not teach a Stockpile Availability block calculates a measure A_s of the percentage of weapons in a stockpile that are ready for issue (RFI) as A_s=RFI/(N_d-Att) where N_d is the

numbered delivered to the stockpile up to a point in time and Att is the attrition up to a point in time. The Examiner notes that the term 'Stockpile Availibility' is interpreted in light of paragraphs **[0093] – [0105] of the specification.**

Regarding claim 40:

The prior art of record does not teach dynamic object that **include all of the following:** MTBF, Time-to-Failure (TTF) and BitDetectable attributes, said Set Failure Variates block using the MTBF as an input to randomly generate a value for the TTF attribute and randomly generating either a 0 or 1 for the BitDetectable attributes based on an overall test effectiveness probability. The Examiner notes the following interpretations (based on the Applicant's disclosure) of the preceding terms:

i. BitDetectable: **[0075]**

ii. MTBF: **[0074]**

iii. TTF: **[0070]**

iv. Set Failure Variates: **[0107] – [0119]**

Regarding claim 41:

The prior art of record does not teach dynamic objects that **include all of the following:** Birth Date, MTBF and TTF attributes, said Service Life Check block using the Birth Data and CurrentTime attributes to calculate the age of the dynamic object and compare it to a service life, and if the age is greater than the service life either take the dynamic object out of service or recalculate its MTBF and TTF attributes as a function of its age. The Examiner notes the following interpretations (based on the Applicant's disclosure) of the preceding terms:

i. Birth Date: **[0069]**

ii. MTBF: **[0074]**

iii. TTF: **[0070]**

iv. Service Life Check: **[0120] – [0130]**

Regarding claim 42:

The prior art of record does not teach dynamic objects that **include all of the following:** dynamic objects include BirthDate and Down Time attributes, said Observe A_o block calculating a single point estimate A_os of A_o as A_o s=1-Down Time/(CurrentTime-Birth Date) where CurrentTime is a current time and a count of the number of observations to date. The Examiner notes the following interpretations (based on the Applicant's disclosure) of the preceding terms:

i. Birth Date: **[0069]**

ii. Down Time: **[0073]**

iii. Observe A_o: **[0131] – [0140]**

Regarding claim 43:

The prior art of record does not teach dynamic objects that **include all of the following:** time-to-failure (TTF), Duty Cycle and BitDetectable attributes, said BIT block performing a sequence of logical operations on the dynamic object to determine whether a false alarm failure occurs, whether a failure is detectable by the value of the BitDetectable attribute and whether the dynamic object's Duty Cycle is greater or less than its TTF. The Examiner notes the following interpretations (based on the Applicant's disclosure) of the preceding terms:

i. TTF: **[0070]**

ii. BitDetectable: **[0075]**

iii. Duty Cycle: **[0071]**

7. **Claim 51 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph and 35 U.S.C. 101**, set forth in this Office action. **Claims 52-56 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.** The following is an **Examiner's statement for Reasons for Allowance:**

Regarding claim 51:

The prior art of record (Upadhya) teaches a discrete event simulation (DES) for the operations and support (O&S) problem of a weapons system, comprising:

a. a plurality of dynamic objects having attributes that represent characteristics of weapons, said attributes having local values that define a local state of each dynamic object (**'4. Implementation' 1st paragraph).** The term 'dynamic objects' is interpreted in light of the specification (**[0012]**) to be weapons. Upadhya discloses performing simulation on weapon platforms.

b. a plurality of static objects having data that is global with respect to the dynamic objects and functional operators, at least some of which are probabilistic **(figure 1).** The term 'static objects' in interpreted in light of the specification (**[0046]**) which states:

> More specifically, the static objects operate on the dynamic objects and/or their attributes in accordance with their functional operators and global data. Common primitive operations include DO delays (scheduling DOs for Future Events), reading, writing, and/or performing arithmetic operations on attributes of DOs, splitting one DO into multiple DOs, or merging multiple DOs together, gathering and compiling information and statistics on DOs, seizing or releasing global static resources objects, and queuing DOs and routing DOs.

Upadhya discloses a state transition table for simulation composed of *static objects* that compute the failure rates *(global data)* of weapons *(dynamic objects)* utilizing exponential and log-normal distributions *(probabilistic)*

c. a network of said static objects that are organized in accordance with a service use profile (SUP) to calculate a time-based prediction *(the variables representing the transitions are dependent on time)* of weapons availability over a life cycle of the weapons system, said network having a global state **(figure 1 and accompanying description: output is availability, which is global data)**, that quantifies repairs of weapons **(figure 1).**

d. a simulation engine that advances to the next change of said local or global states whereat said static objects read and write said attributes in accordance with their functional operators and global data and update the time-based prediction of weapons availability as the dynamic objects traverse the network **('4. Implementation'; '5. Parameter Values').**

The prior art of record (Srinivasan) teaches calculating the availability by incorporating in logistic delays, which are partially caused by spare stock parts **(Srinivasan: '1. Introduction' 4th paragraph; '2. Methodology' 4th paragraph).**

The prior art of record (Schwartz) teaches EKV simulation.

The prior art of record does not teach: a network of objects that are organized in three hierarchical blocks Delivery, Repair & Deployment; Silo Storage and Periodic Test; and Maintenance Returns in accordance with a service use profile (SUP) to calculate a time-based prediction of weapons availability over a life cycle of the EKV program to (1) decide between two competing maintenance concepts A and B for the program; (2) quantify repairs of EKV payloads; and (3) identify major spares requirements for EKV payloads return, said network having a global state. Though the prior art teaches the preceding steps (2) and (3), the claim requires that all three steps be executed. The Examiner notes that the preceding blocks are interpreted in light of the specification as follows:

i. Delivery, Repair, & Deployment block: **figure 24**

ii. Silo Storage and Periodic Test block: **figure 25**

iii. Maintenance Return block: **figure 26**

Furthermore, **the prior art of record does not meet the conditions as suggested in MPEP section 2132**, namely:

"The identical invention must be shown in as complete detail as is contained in the ... claim." Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). The elements must be arranged as required by the claim, but this is not an **ipsissimis verbis** test, i.e., identity of terminology is not required. **In re Bond**, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990)."

In particular, the **prior art of record does not disclose the specific combination and arrangement of the elements** "A discrete event simulation (DES) for the operations and support (O&S) problem of a Exoatmospheric Kill Vehicles (EKV) program, comprising: a plurality of dynamic objects having attributes that represent characteristics of EKVS, said attributes having local values that define a local state of each dynamic object; a plurality of static objects having data that is global with respect to the dynamic objects and functional operators, at least some of which are probabilistic; a network of said static objects that are organized in three hierarchical blocks Delivery, Repair & Deployment; Silo Storage and Periodic Test; and Maintenance Returns in accordance with a service use profile (SUP) to calculate a time-based prediction of weapons availability over a life cycle of the EKV program to (1) decide between two competing maintenance concepts A and B for the program; (2) quantify repairs of EKV payloads; and (3) identify major spares requirements for EKV payloads return, said network having a global state; and a simulation engine that advances to the next change of said local or global states whereat said static objects read and write said attributes in accordance with their functional operators and global data and update the time-based prediction of weapons availability as the dynamic objects traverse the network" as now recited in independent claim 51.

Dependent **claims 52-56** are deemed allowable as depending from independent claim 51.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shambhavi Patel whose telephone number is (571) 272-5877. The examiner can normally be reached on Monday-Friday, 8:00 am – 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on (571) 272-2279. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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